

MISSOURI MONTHLY VITAL STATISTICS

Provisional Statistics

From The

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Focus...Smoking-Attributable Mortality in Missouri 2000

Cigarette smoking is the number one preventable cause of premature death in the United States, accounting for over 430,000 premature deaths each year according to the Centers for Disease Control and Prevention (CDC). In the U.S. smoking has been estimated to be responsible for \$50 to \$89 billion in excess medical care expenditures.

Since 1987, the CDC has used the Smoking-Attributable Mortality, Morbidity and Economic Costs (SAMMEC)¹ application to estimate the disease impact of smoking for the nation, states and large populations. These estimates were based on an attributable-fraction methodology that applies current information on cigarette smoking prevalence to scientific data on the relative risk of death from smoking-related diseases. Estimates are necessary in the absence of information on death certificates about the smoking history of individuals. Smoking prevalence by age and

gender comes from the annual Behavioral Risk Factor Surveillance System (BRFSS), while causes of death come from Missouri death certificates.

Using the SAMMEC methodology, this article estimates the smoking attributable mortality for the Missouri population in 2000 and examines it by region and does comparisons with available national estimates for 1999. (See www.dhss.state.mo.us/Publications/98BRFSS.html for list of counties in each region).

Nearly 10,000 (9,941) Missourians died from smoking-attributable deaths in 2000 (See Table 1). A total of 3,754 died from cancer, 3,714 died from cardiovascular diseases, and 2,447 died from respiratory diseases that were attributable to smoking cigarettes. An additional 26 infants died from various smoking-attributable deaths related to maternal smoking during pregnancy. The leading

Table 1
Smoking-Attributable Mortality by Cause by Gender: Missouri 1995 and 2000

	<i>Male</i>		<i>Female</i>		<i>Total</i>	
	<i>1995</i>	<i>2000</i>	<i>1995</i>	<i>2000</i>	<i>1995</i>	<i>2000</i>
Malignant neoplasms	2,558	2,437	1,202	1,317	3,760	3,754
Cardiovascular diseases	2,873	2,231	1,642	1,483	4,515	3,714
Respiratory Diseases	1,421	1,310	1,010	1,137	2,431	2,447
Infant Conditions	13	13	10	13	23	26
Total	6,865	5,991	3,864	3,950	10,729	9,941

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cause of smoking-attributable death was lung cancer with 3,097 deaths. It is estimated that cigarette smoking causes approximately 90 percent of male- and 80 percent of female-lung-cancer deaths among those aged 35-64. Other specific leading causes of smoking-attributable deaths include ischemic heart disease (2,183 deaths), chronic obstructive pulmonary disease (2,169 deaths), and stroke (450 deaths).

The 9,941 smoking-attributable deaths in 2000 represent a 7 percent decrease from the 1995² count of 10,729. As Table 1 shows, nearly all of the decrease was due to a decrease in deaths from cardiovascular diseases and a decrease in deaths among males. Smoking-attributable-cancer deaths stayed about the same between 1995 and 2000, while female smoking-attributable deaths actually increased. Men still had more smoking-attributable

deaths in 2000 than women, (60 percent vs. 40 percent), although down from 64 percent in 1995.

The Missouri age-adjusted death rate in 2000 from smoking-attributable deaths was about 12 percent higher than the national 1999 rate (167.6 vs. 149.7 per 100,000 population, respectively). For all three major age categories studied (under 1, 35-64 and 65+) the death rate was higher in Missouri than in the United States. Regionally, the highest smoking-attributable death rate occurred in Southeastern Missouri (184.0 per 100,000 population) while the lowest rate occurred in Northern Missouri (151.0). The Southeastern region had a particularly high rate of premature death for persons aged 35-64, 38 percent higher than the Missouri rate and 61 percent higher than the national rate (See Table 3).

Table 2
Smoking-attributable Deaths and Rates per 100,000 by age and region: Missouri 2000

<i>Region</i>	<i>Deaths by Age Group</i>			
	<i>Under 1</i>	<i>35-64</i>	<i>65+</i>	<i>Total</i>
St. Louis Metro	8.7	889	2,535	3,433
Kansas City Metro	3.8	444	1,220	1,668
Central	2.5	309	796	1,108
Northern	1.6	219	709	930
Southeastern	4.3	392	824	1,220
Southwestern	4.4	419	1,123	1,546
Statewide* Total	26.0	2,674	7,241	9,941

*Sum of regions do not add up to statewide total due to rounding and independent SAMMEC estimation procedures

<i>Region</i>	<i>Death Rates per 100,000 population</i>			
	<i>Under 1</i>	<i>35-64</i>	<i>65+</i>	<i>Total</i>
St. Louis Metro	31.7	115.8	997.9	171.1
Kansas City Metro	23.9	108.6	945.7	161.6
Central	29.5	121.4	926.6	164.2
Northern	25.9	113.5	846.4	151.0
Southeastern	61.0	168.1	937.1	184.0
Southwestern	38.9	125.5	931.3	166.5
Statewide* Total	34.1	122.0	950.7	167.6
US Total, 1999	22.8	104.5	863.7	149.7

*Sum of regions do not add up to statewide total due to rounding and independent SAMMEC estimation procedures

Table 3
Current Smoking Rates (Percents) by Region: Missouri 2000 BRFSS Survey

		Males		Females		
	Total	35-64	65+	35-64	65+	Pregnant Women
St. Louis Metro	27.0	33.8	23.1	26.9	13.2	13.8
Kansas City Metro	26.6	29.2	20.3	30.3	4.5	15.4
Central	28.1	29.4	14.6	25.1	14.6	22.8
Northern	27.7	33.5	14.6	30.1	8.3	22.8
Southeastern	31.3	41.2	12.6	29.4	5.0	26.9
Southwestern	27.8	28.3	10.3	29.1	18.7	22.0
Missouri Total	27.2	32.3	17.3	28.2	11.2	18.3
U. S. 1999	23.3	27.6	14.6	25.1	14.6	12.6

Note: Source for pregnant women is birth certificates, U. S 1999 source is National Health Interview Survey

This high rate in the Southeastern region reflects their high smoking prevalence rate according to the BRFSS survey (See Table 3). For males 35-64 the Southeastern current smoking prevalence rate in 2000 was 41.2 percent compared with 32.3 percent in Missouri and 27.6 percent nationally. As Table 3 shows, Southeastern Missouri pregnant women also had higher smoking rates (26.9 percent) than pregnant women in any region in the state, and were higher than the state (18.3 percent) or the nation (12.6 percent).

Table 4 shows that an estimated 131,214 potential years of life (YPLL) was lost to Missourians in 2000 from cigarette smoking. This

amounts to an average of 13.2 years for each of the nearly 10,000 smoking-attributable deaths. Nearly 45,000 potential years of life were lost to residents of the St. Louis Metro Region. The highest rate of YPLL per death occurred to Southeastern Missouri residents (14.0 years) while the lowest was for Northern Missouri (12.3 years). YPLL was calculated by estimating the remaining life expectancy for each smoking attributable death using Missouri 2000 life tables.

Another aspect of the SAMMEC methodology allows the calculation smoking-attributable productivity costs. These are calculated as lost future income and productivity resulting from a

Table 4
Smoking-attributable Years of Potential Life Lost (YPLL):
Missouri, 2000

<i>Region</i>	<i>YPLL</i>	<i>Years lost/ Death</i>
St. Louis Metro	44,993	13.1
Kansas City Metro	22,181	13.3
Central	14,624	13.2
Northern	11,444	12.3
Southeastern	17,010	14.0
Southwestern	20,339	13.2
Statewide* Total	131,214	13.2

*sum of regions do not add up to statewide total due to rounding and independent SAMMEC estimation procedures

premature, smoking-related death. For Missouri in 2000, this amounted to over \$2 billion lost from smoking-attributable deaths (See Table 5). St. Louis Metro once again had the largest loss because of their larger population (\$695 million). Other regions also show substantial losses.

The SAMMEC software also calculates adult smoking-attributable medical expenditures. Based on 1998 data, medical expenditures from diseases in which smoking was a primary risk factor amounted to \$1.67 billion or 8.4 percent of all Missouri medical expenditures.

Clearly the costs to Missouri from cigarette smoking are enormous. Missouri had the third highest adult smoking prevalence rate in the nation (27.2 percent), according to the CDC BRFSS in 2000. Only Kentucky and Nevada had higher smoking rates. The rate dropped insignificantly in 2001 to 25.9 percent, but Missouri still ranked 8th. This high smoking prevalence rate is reflected in an age-adjusted smoking-attributable mortality rate approximately 12 percent higher than the national rate. Smoking prevalence in Missouri has changed insignificantly in the last few years. In 1995, Missouri's smoking rate was 24.5 percent and ranked 16th in the nation. Nationally, the smoking prevalence rate decreased from 24.7 in 1995 to 23.4 in 2000.

Missouri also has a high rate of smoking among teen-agers. A survey of high school students (Youth Risk Behavior Survey 2001) showed a smoking prevalence rate of 32.8 percent among youth in grades 9-12 in Missouri compared to a national rate of 28.0 percent. Most adults start smoking in their teens, and therefore, preventing teens from starting smoking is vital to reducing the burden of smoking on society.

Possible strategies to reduce smoking prevalence and thereby reduce smoking attributable mortality include:

- 1) Increase the tobacco excise tax;
- 2) Increase smoking bans in workplaces and public places; and
- 3) Increase affordable cessation services and therapies.

References:

1. *Centers for Disease Control and Prevention. Smoking-Attributable Mortality, Morbidity, and Economic Costs (SAMMEC): Adult SAMMEC and Maternal and Child Health (MCH) SAMMEC software, 2002c.* Available at: www.cdc.gov/tobacco/sammec.
2. *Missouri Monthly Vital Statistics. Smoking-Attributable Mortality in Missouri.* March 1998, Vol. 32, No. 1. Available at www.dhss.state.mo.us/MonthlyVitalStatistics/Yj98.html

Table 5
Productivity Costs; Missouri 2000

<i>Region</i>	<i>Productivity Costs Millions of Dollars</i>
St. Louis Metro	\$695
Kansas City Metro	\$347
Central	\$230
Northern	\$168
Southeastern	\$291
Southwestern	\$316
Statewide Total	\$2,054

Provisional Vital Statistics for October 2002

Live births increased in October as 7,104 Missouri babies were born compared with 6,840 one year earlier. Cumulative births for January-October also increased, but decreased for the 12 months ending with October.

Deaths decreased in October as 4,878 Missourians died compared with 5,035 one year earlier. However, cumulative deaths for the 10- and 12- month periods ending with October both show increases. For January-October, deaths increased by 3.5 percent from 46,317 to 47,929.

The **Natural increase** for October was 2,226 (7,104 births minus 4,878 deaths). For the

cumulative 10- and 12- month periods ending with October, the natural increase declined.

Marriages decreased for all three time periods shown in the table below.

Dissolutions of marriage also decreased for all three time periods. For the 12 months ending with October, the marriage to divorce ratio increased from 1.77 to 1.81.

Infant deaths increased for all three time periods shown below. For January-October, the infant death rate increased from 8.2 to 8.7 per 1,000 live births.

PROVISIONAL VITAL STATISTICS FOR OCTOBER 2002

Item	October				Jan.-Oct. cumulative				12 months ending with October				
	Number		Rate*		Number		Rate*		Number		Rate*		
	2001	2002	2001	2002	2001	2002	2001	2002	2001	2002	2000	2001	2002
Live Births	6,840	7,104	14.3	14.7	63,692	64,150	13.6	13.6	76,929	75,987	13.6	13.7	13.4
Deaths	5,035	4,878	10.5	10.1	46,317	47,929	9.9	10.1	54,370	55,939	9.9	9.7	9.9
Natural increase	1,805	2,226	3.8	4.6	17,375	16,221	3.7	3.4	22,559	20,048	3.7	4.0	3.5
Marriages	3,966	3,904	8.3	8.1	36,746	36,643	7.8	7.8	42,027	41,983	7.9	7.5	7.4
Dissolutions	2,027	1,802	4.2	3.7	19,635	19,221	4.2	4.1	23,747	23,144	4.5	4.2	4.1
Infant deaths	58	70	8.5	9.9	525	561	8.2	8.7	590	640	7.6	7.7	8.4
Population base (in thousands)	...	...	5,637	5,673	...	...	5,637	5,673	...	...	5,587	5,630	5,667

* Rates for live births, deaths, natural increase, marriages and dissolutions are computed on the number per 1000 estimated population. The infant death rate is based on the number of infant deaths per 1000 live births. Rates are adjusted to account for varying lengths of monthly reporting periods.

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